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ABSTRACT

5 An asymmetric supercapacitor comprises a positive electrode comprising a current collector an active material selected from the group consisting of manganese dioxide, silver oxide, iron sulfide and mixtures thereof, a negative electrode comprising a carbonaceous active material carbon and optional current collector, an electrolyte, and a separator plate. In a preferred embodiment at least one of the electrodes comprises nanostructured/nanofibrous material and in a more preferred embodiment, both electrodes comprise nanostructured/nanofibrous material. The electrolyte can be liquid or solid although liquid electrolytes are preferred.

10 The asymmetric supercapacitor has improved energy density by electrically coupling an electrode of high faradaic capacity such as one comprising manganese oxide ( $\text{MnO}_2$ ) with an electrode such as carbon that stores charge through charge separation at the electric double-layer. The asymmetric supercapacitor also improves power density by using high surface area nanostructured/nanofibrous electrode materials.

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